

WHAT IS CLAIMED IS:

1. A unit for performing a silylation treatment on the surface of a substrate, comprising:

a chamber;

5 a heating mechanism provided in said chamber for heating the substrate;

a supplying mechanism for supplying a vapor including a silylation reagent into said chamber; and

10 a substrate holder for holding the substrate in said chamber, in which an interval between said heating mechanism and the substrate is adjustable to at least three levels or more.

15 2. The unit according to claim 1, wherein the temperature of the vapor is set to be almost the same as that of the substrate.

3. The unit according to claim 1, wherein the vapor is supplied horizontally.

20 4. The unit according to claim 1, wherein said supplying mechanism is a supply ring in a ring shape for surrounding the substrate.

5. The unit according to claim 4, wherein a plurality of supply holes are formed in an inner circumferential surface of a ring member of the supply ring.

25 6. The unit according to claim 5, wherein the supply holes are also disposed in a vertical direction of the inner circumferential surface, in which a

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diameter of the upper supply hole is larger than a diameter of the lower supply hole.

5        7. The unit according to claim 4, wherein a plurality of supply holes are formed in almost half of an inner circumferential surface of a ring member of the supply ring and a plurality of exhaust holes are formed opposingly to the supply holes in the remaining half of the inner circumferential surface.

10       8. The unit according to claim 1, wherein said supplying mechanism supplies the vapor only to a treatment surface of the substrate.

9. The unit according to claim 8, wherein said supplying mechanism supplies an inert gas to a non-treatment surface of the substrate.

15       10. The unit according to claim 9, wherein said supplying mechanism is structured to be able to supply the inert gas to the treatment surface of the substrate selectively.

20       11. The unit according to claim 8, further comprising:

25       a hot plate as said heating mechanism;  
lifter pins as said substrate holder; and  
holes formed penetratingly through the hot plate in a vertical direction, through which the lifter pins project from the hot plate for moving in a vertical direction,

wherein an inert gas is supplied to a

non-treatment surface of the substrate through the holes.

12. A method for performing a silylation treatment on the surface of a substrate, comprising the steps of:

5 carrying in the substrate into a chamber and disposing it at a predetermined interval from a heating mechanism provided in said chamber;

supplying a vapor including a silylation reagent into said chamber such that said chamber is filled with an atmosphere of the silylation reagent;

10 raising the temperature in said chamber by said heating mechanism;

bringing the substrate closer to said heating mechanism such that the silylation atmosphere is dispersed uniformly inside said chamber at a temperature where a silylation reaction of the substrate does not occur; and

15 further bringing the substrate closer to said heating mechanism to make the temperature of the substrate higher such that the silylation reaction occurs on the surface of the substrate.

20 13. The method according to claim 12, wherein an interval between said heating mechanism and the substrate is adjustable to at least three levels or more.

25 14. The method according to claim 12, wherein the vapor including the silylation reagent is supplied

after the pressure of said chamber is reduced.

5 15. The method according to claim 12, wherein the silylation reaction is made to occur where the supply of the vapor including the silylation reagent into said chamber is stopped, the exhaust from said chamber is not performed, and said chamber is sealed.

10 16. The method according to claim 12, wherein the silylation reaction is stopped by supplying an inert gas into said chamber and exhausting the vapor including the silylation reagent from said chamber.

17. The method according to claim 16, wherein the substrate is carried away from said heating mechanism after the vapor including the silylation reagent is exhausted from said chamber by supplying the inert gas.

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